REMARKS

The Office Action mailed March 26, 2003 has been received and reviewed. The application is to be amended as set forth. Claims 1-3, 9-11 and 33-50 were rejected. Claims 1 and 9-11 have been canceled consistent with 37 C.F.R. § 1.121, as amended to date. Claims 12-32, drawn to non-elected inventions, have been withdrawn. Claims 2, 33, 35, 37, 40, 43, 46, and 49-50 are currently amended. Claims 2-3 and 33-50 are currently pending and under examination. All claim amendments and cancellations are made without prejudice or disclaimer. Reconsideration of the application is respectfully requested.

INTERVIEW

Applicants would like to thank Examiners Marvich and Guzo for the courtesy extended during the interview held on August 7, 2003. The applicants found the interview to be very helpful to applicants in advancing the prosecution of the present application, as evidenced by the remarks in the Interview Summary: "New matter rejection & 103(a) rejection to be reconsidered given applicants' arguments. Specifically, as to new matter rejection, the NdeI site in figure 6 shows tail region retained. As to 103(a) rejection, Wickham does not teach altered tropism."

SEQUENCE COMPLIANCE

Responsive to the remarks at page 2 of the Office Action concerning compliance with 37 C.F.R. § 1.821, Table 3 has been amended and replacement Figures 7 and 10 are submitted as Appendices A and B, respectively, to comply with the provisions of 37 C.F.R. § 1.821.

Table 3 has been amended to include sequence identifiers for all sequences encompassed by 37 C.F.R. § 1.821.

Replacement FIGS. 7 and 10 are submitted in Appendices A and B. Replacement FIGS. 7 and 10 differ from the as-filed FIGS. 7 and 10 in that the replacement drawings have been revised to include sequence identifiers for each sequence encompassed by 37 C.F.R. § 1.821.

It is respectfully submitted that these amendments should resolve all outstanding sequence compliance issues.

REJECTION UNDER 35 U.S.C. §103(a)

The Office maintained the rejection of claims 1-3, 9-11, and 33-50 as being assertedly unpatentable over U. S. Patent 6,127,525 to Crystal et al. ("Crystal") in view of PCT International Patent Publication WO 96/26281 to Wickham et al. ("Wickham") under 35 U.S.C. § 103(a).

To establish a *prima facie* case of obviousness, three basic criteria must be met. (*See* M.P.E.P. 706.02(j) and 2143). First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The rejection of claims 1 and 9-11 is moot in view of the cancellation of those claims.

The Office action, at page 4, asserts that Wickham teaches "the construction of adenoviral fiber proteins and methods of their use for altering tropism of adenoviral vectors for gene therapy." Applicants respectfully disagree and believe that the Office was persuaded during the interview that Wickham does not in fact teach altered tropism, as reflected in the Interview Summary.

Wickham, at Example 7, discloses the replacement of the adenovirus 5 fiber protein with the fiber protein from adenovirus 7. However, this change in fiber protein resulted in no change in tropism. Wickham relates that "[t]he replacement of the wild-type Ad5 fiber gene with that of Ad7 did not impair the ability of the virus to infect cells. Accordingly, the virus in which the

native fiber was replaced with a nonnative fiber could also infect cells and express gene ***like the parental virus*** in vivo." (Wickham, p. 29). As such, Wickham does not disclose that swapping fiber proteins alters virus tropism. On the contrary, the above passages from Wickham teach exactly the opposite, *i.e.*, that swapping fiber proteins ***did not*** alter tropism.

Furthermore, since Wickham showed that the replacement of Ad5 fiber protein with the Ad7 fiber protein did not alter virus tropism, Wickham provides no basis for a reasonable expectation of success in altering tropism through fiber protein swapping. "Evidence showing there is no reasonable expectation of success may support a conclusion of nonobviousness." M.P.E.P § 2143.02 citing *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976). It is thus respectfully submitted that Wickham cannot render obvious altered tropism in an adenoviral vector by swapping tail fiber proteins.

The Office notes that Crystal describes that multiple deletions of 1-50 to 1-700 amino acids may be made in native fiber proteins. The Office goes on to assert that the "[t]ail region is not deleted in at least some of these deletions as the head region is about 100 amino acids." In making this statement, the Office is suggesting that one ***could*** rearrange the deletions in the fiber protein to arrive at fiber proteins with native tail sequences without providing any evidence that this was actually done. The mere fact that a worker in the art ***could*** rearrange the parts of the reference [compound] to meet the terms of the claims . . . is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation for the worker in the art, without the benefit of Applicants' specification, to make the necessary changes in the reference teachings to produce the claimed invention. *Ex parte Chicago Rawhide Mfg. Co.*, 223 USPQ351, 353 (Bd. Pat. App. & Inter. 1984).

Crystal and Wickham provide no motivation for the ordinarily skilled artisan to rearrange the deletions such that sequence from the native fiber tail region is conserved. In contrast, FIG. 6 of the present application and its accompanying discussion shows that a part of the tail region of the Ad 5 fiber protein is retained when the sequence encoding the fiber protein is cut at the NdeI

site.

Additionally, holding the astronomical number of possible configurations for multiple deletions of 1-50 amino acids as making the retention of tail fiber sequences obvious would amount to an obvious to try standard. Under *In re O'Farrell*, "what was 'obvious to try' was to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it." *In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988). Crystal provides a general approach for modifying fiber proteins to reduce their antigenicity. Where it provides a specific approach in Examples 2 and 3, only complete fiber proteins are swapped. Crystal teaches nothing with respect to retention of any part of the fiber tail region. The vast number of other possible deletions using Crystal's teachings amount to nothing more than an invitation to experiment. *Id.* For the foregoing reasons, it is respectfully submitted that the claimed invention is not obvious over Crystal in view of Wickham.

As stated previously, the Office has not made the requisite showing of a teaching or motivation to combine the teachings of Crystal and Wickham to produce the claimed invention. The Office, in responding at page 10 of the Office Action to this argument, states that "[t]he motivation to combine the reference teachings was to incorporate the benefit of altered tropism as detailed in Wickham et al. in the chimeric fusion of Crystal that had reduced antigenicity." On the contrary, as noted above, Wickham does not teach altered tropism. However, even if a combination of two references incorporates the benefit provided by one into the other, this does not render such a combination obvious.

A person of ordinary skill in the art would, after reading Crystal, not be encouraged to swap fibers. The problem that Crystal sought to solve is the raising of neutralizing antibodies against the coat of the adenoviral particles. Crystal relates in Example 3 that: "These results confirm that switching the fiber from that of adenoviral serotype 5 group C vector to that of an

adenoviral serotype 7 group B vector by itself ***is insufficient*** to allow the vector to escape neutralizing antibodies generated against an adenoviral vector comprising Ad5 fiber." Crystal provides no suggestion or motivation to the ordinarily skilled artisan to swap fibers, since Crystal teaches that fiber swapping was not effective.

In order to make a *prima facie* showing of obviousness, the Office must provide a motivation to combine that is present "expressly or impliedly in the prior art or drawn form a convincing line of reason based on established scientific principles or legal precedent." *In re Sernaker*, 702 F.2d 989, 994-95, 217 USPQ 1, 5-6 (Fed. Cir. 1983). Furthermore, "the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention." *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986). As such, the mere recitation that an expected benefit was to be gained from the combination of two references does not distinguish 35 U.S.C. § 103(a) obviousness from hindsight-based obviousness without further explanation. It must be shown that a motivation to combine existed, absent what is disclosed in the present application, present in the prior art or drawn from a convincing line of reasoning based on established scientific principles or legal precedent. There must be an identification of the principle, known to one of ordinary skill in the art, which suggests the claimed combination. *In re Rouffet* at 1359.

Finally, applicants would like to point out that 4 of the 6 inventors listed in Wickham are listed in Crystal. As such, if it were obvious to combine the altered antigenicity of Crystal with the altered tail fibers for the purposes of gene therapy described in Wickham, it should have been readily apparent to those common inventors. As the combination of the fibers selected from the specifically claimed serotypes in the pending claims of the present invention was not struck upon by those intimately involved in both Crystal and Wickham, it cannot be said that the claimed combination would be obvious to one with the knowledge of one ordinarily skilled in the art.

It is therefore respectfully submitted that claims 2-3 and 33-50 are not obvious over Crystal in view of Wickham, and the rejection of these claims under 35 U.S.C. 103(a)

accordingly should be withdrawn.

NEW MATTER REJECTION - 35 U.S.C. § 112, first paragraph

Claims 1-3, 9-11, and 33-50 were rejected under 35 U.S.C. §112, first paragraph, as "containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was-filed, had possession of the claimed invention." In support of this rejection, the Office, at page 6 of the Office Action, asserts that "[t]here is no support in this disclosure that the tail region of the native adenovirus is retained." Applicants respectfully disagree. (*See, e.g.*, FIG. 6 and accompanying discussion).

The rejection of claims 1 and 9-11 is moot in view of the cancellation of those claims.

The as-filed specification clearly instructs the ordinarily skilled artisan how to generate recombinant adenovirus fiber proteins where a region of the native tail is retained. Example 2, in the sub-section entitled "generation of adenovirus template clones lacking DNA encoding fiber" relates the creation and use of the pBr/Ad.BamRΔFib construct. (*See* Specification, pages 34-36). This construct, as depicted in FIG. 6, has NdeI and NsiI restriction sites that are within the sequence encoding the fiber protein. It is with these restriction sites that the N-terminus of a fiber protein sequence may be attached to the pBr/Ad.BamRΔFib construct. (*See* Specification, page 32, lines 23-25). As these restriction sites appear within the coding sequence, one of ordinary skill in the art will readily appreciate that a portion of the tail region remains in the construct and will be expressed with the chimeric fiber sequences.

Examples of native tail fiber sequence attached to chimeric tail fiber sequences are provided in Figure 7. The brief description of Figure 7, on page 14 of the Specification, relates that "[b]old letters represent part of the tail of Ad5." (Specification, page 14, line 10). Figure 7 goes on to provide 18 examples of chimeric fiber proteins where native Ad5 tail region sequences are present. (*See* FIG. 7). In many of these sequences, including claimed serotypes 34

and 35, as many as 31 amino acids of the 46 amino acid Ad5 tail region are present. (FIG. 7 at 1.1-1.3, 1.7, 1.8, 1.10, 1.12-1.19. 1.21, 1.26, 1.28, 1.29)). Furthermore, the retained native Ad5 tail sequences contain the important conserved KRAR and FNPVYPYD/E motifs. (*See,* J. Chroboczek et al., *Adenovirus Fiber*, Curr. Top. in Microbiol. and Immunol, 199:163-200, (1995)). As such, applicants respectfully submit the inclusion of a region of the native tail in chimeric fiber proteins is described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was-filed, had possession of the invention inclusive of "a tail region," as claimed. It is therefore respectfully submitted that "a tail region" is adequately supported by the written description of the as-filed specification and is not new matter. Withdrawal of the rejection under the first paragraph of 35 U.S.C. §112 is accordingly respectfully solicited.

REJECTIONS UNDER 35 U.S.C. § 112, second paragraph

Claims 2, 33, 35, 37, 40, 46, 49 and 50 are rejected as assertedly being vague for use of the terminology "derived from." These claims have been amended to delete the term "derived." Accordingly, applicants respectfully request that the rejection be withdrawn.

Claims 2, 43 and 46 are rejected as assertedly being unclear for use of the terminology "functionally inserting." These claims have been amended to delete the term "functionally." As such, the applicants respectfully request that the rejection be withdrawn.

Claims 37 and 40 are rejected as assertedly being vague for use of the terminology "a functional part of a penton or hexon protein" or "functional part of a fiber protein." These claims have been amended to delete the term "functional." As such, applicants respectfully request that the rejection be withdrawn.

Claim 40 is also rejected as assertedly being unclear in use of the terminology "the method comprising: the fiber protein adenovirus serotype 35." Claim 40 has been amended to correct this typographical error and applicants respectfully request that the rejection be

withdrawn.

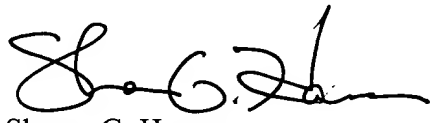
Claim 50 is rejected as being incomplete for assertedly omitting essential steps. Particularly, the claim fails to recite "how a chimeric adenoviral particle can be 'provided' with a gene sequence encoding a tail region" (Office Action at page 7).

M.P.E.P. 2172.01 relates that: "[a] claim which omits matter *disclosed to be essential to the invention as described in the specification or in other statements of record* may be rejected . . . as not enabling" (emphasis presented). Applicants respectfully submit that the "how" required by the Office is not essential to the invention. The manipulation of nucleic acids to link the DNA encoding the tail region of a fiber protein of one adenovirus serotype to the DNA encoding part of fiber protein from adenovirus serotype 35 is well within the skill of the ordinarily skilled artisan. As a result, no disclosure of the exact manner in which DNA encoding the tail fiber region of one adenovirus serotype is linked to the DNA encoding part of fiber protein from adenovirus serotype 35 is essential to the invention. Therefore, applicants respectfully request that the rejection of claim 50 under the second paragraph of 35 U.S.C. § 112 be withdrawn

Conclusion

It is believed the amendments place claims 2-3 and 33-50 in condition for allowance, and timely issuance of a Notice of Allowance in this case is therefore respectfully requested. Should the Office determine that additional issues remain which might be resolved by a telephone conference, it is respectfully invited to contact applicants' attorney of record at the address or telephone number given herein.

Respectfully submitted,



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Enclosures: **Appendix A** (replacement drawing sheets for Figure 7);
Appendix B (replacement drawing sheets for Figure 10)

SGH/djm

Document in ProLaw

APPENDIX A

(REPLACEMENT SHEETS FOR FIGURE 7)

(Attorney Docket No.: 2578-4123.2US)
(Serial No. 09/348,354)

Figure 7:

1.1: Serotype 8 fiber protein (SEQ ID NO:14)

SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSNGFQ
NFPPGVLSLKLADPITINNQNVSLKVGGGLTLQEETGKLTVNTEPPLHLTNNKLGI
ALDAPFDVIDNKLTLLAGHGLSUTKETSTLPGLVNTLVVLTGKGIGTDLSNNGGN
ICVRVGEGGGLSFNDNGDLVAFNKKEDKRTLWTTPDTSPNCRIDQDKDSKLTLV
LTKCGSQILANVSLIVVAGRYKIINNNTNPALKGFTIKLLFDKNGVLMESSNLGKS
YWNFRNQNSIMSTAYEKAIGFMPNLVAYPKPTTGSKKYARDIVYGNIYLGGKPH
QPVTIKTTFNQETGCEYSITFDSWAKTYVNVEFETTSFTFSYIAQE.

1.2: Serotype 9 fiber protein (SEQ ID NO:15)

SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFQ
NFPPGVLSLKLADPIAIVNGNVSLKVGGGLTLQDGTGKLTVNADPPLQLTNNKL
GIALDAPFDVIDNKLTLLAGHGLSIITKETSTLPGLINTLVVLTGKGIGTESTDNGG
SVCVRVGEGGGLSFNNDGDLVAFNKKEDKRTLWTTPDTSPNCKIDQDKDSKLTL
VLTKCGSQILANVSLIVVAGKYKIINNNTQPALKGFTIKLLFDENGVLMESSNLGK
SYWNFRNENSIMSTAYEKAIGFMPNLVAYPKPTAGSKKYARDIVYGNIYLGGKP
DQPVTIKTTFNQETGCEYSITFDFSWAKTYVNVEFETTSFTFSYIAQE.

1.3: Serotype 13 fiber protein (SEQ ID NO:16)

XXXXXSAPTIFMLLQMKRARSSXDTFNPVYPYGYARNQNIXFXTPPFVXSDGF
KNFPPGVLSLKLADPITIANGDVSLKVGGGLTLQEGSLTVDPKAPLQLANDKKLE
LVYDDPFEVSTNKLSLKVGHGLKVLDDKSAGGLKDLIGKLVVLTGKGIGIENLQ
NDDGSSRGVGINVRLGTDGGLSFDRKGELVAWNRKDDRRTLWTTPDPSPNCKA
ETEKDSKLTLVLTKCGSQILATVSIIVLKGKYEFVKKETEPKSFDVKLLFDSKGVL
LPTSNLSKEYWNYRSYDNNIGTPYENAVPFMPNLKAYPKPTKTASDKAENKISS
AKNKIVSNFYFGGQAYQPGTIIIKFNEEIDETCAYSITFNFGWGKVYDNPFPFDTTS
FTXSYIAQE.

1.4: Serotype 14 fiber protein (SEQ ID NO:17)

HPFINPGFISPNGFTQSPDGVLTLKCLTPLTTTGGSLQLKVGGGLTVDDTDGTLQE
NIGATTPLVKTGHSIGLSLGAGLGTDENKLCTKLGEGLTFNSNNICIDDNINTLWT
GVNPTEANCQMMDSSESNDCKLILTLVKTGALVTAFVYVIGVSNNFNMLTTYRN
INFTAELFFDSAGNLLTSLSSLKTPLNHKSGQTWLLVPLLMLKVSCPAQLLILSIIIL
EKNKTTFTELVTTQLVITLLFPLTISVMLNQRAIRADTSYCIRITWSWNTGDAPEG
QTSATTLVTS

1.5: Serotype 20 fiber protein (SEQ ID NO:18)
IQNIPFLTPPFVSSDGLQNFPPGVLSLKLADPIAIVNGNVSLKVGGGITVEQDSGQL
IANPKAPLQVANDKLELSYAYPFETSANKLSLKVGQGLKVLDEKDSGGLQNLLG
KLVVLTGKGIGVEELKNPDNTNRGVGINVRLGKDGGLSFNKNGELVAWNKHND
TGTLWTTPDPSPNCKIEEVKDSKLTLVLTKCGSQILATMAFQVVKGTYENISKNT
AKNSFSIKLLFDDNGKLLEGSSLDKDYWNFRSDDSIIPNQYDNAVPFMPNLKAYP
KPSTVLPSTDKNSNGKNTIVSNLYLEGKAYQPVAVTITFNKEIGCTYSITFDFGWA
KTYDVPIPFDSSSFT

1.6: Serotype 23 fiber protein (SEQ ID NO:19)
QNIPFLTPPFVSSDGFQNFPPGVLSLKLADPIAITNGDVSLKVGGGLTVEQDSGNL
KVNTKAPLQVAADKQLEIALADPFEVSKGRLGIKAGHGLKVIDNSISGLEGLVGT
LVVLTGHGIGTENLLNNDGSSRGVGINVRLGKDGGLSFDKKGDLVAWNKKYDT
RTLWITPDPSPNCKVIEAKDSKLTLVLTKCGSQILANMSLLILKGTYEYISNAIAN
KSFTIKLLFNDKGVLMDGSSLDKDYWNYKSDDSVMSKAYENAVPFMPNLKAYP
NPTTSTTNPSTDKKSNGKNAIVSNVYLEGRAYQPVAITITFNKETGCTYSMTFDF
GWSKVYNDPIPFDTSSLT

1.7: Serotype 24 fiber protein (SEQ ID NO:20)
SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFQ
NFPPGVLSLKLADPIAITNGDVSLKVGGGLTVEKDSGNLKVNPKAPLQVTTDKQL
EIALAYPFEVSNGKLGIKAGHGLKVIDKIAGLEGLAGTLVVLTGKGIGTENLENS
DGSSRGVGINVRLAKDGGLSFDKKGDLVAWNKHDDRRTLWTTPDPSPNCTIDQ
ERDSKLTLVLTKCGSQILANVSLLVVKGKFSNINNNTNPTDKKITVKLLFNEKGV
LMDSSTLKKEYWNYRNDNSTVSQAYDNAVPFMPNIKAYPKPTTDTSAKPEDKK
SAAKRYIVSNVYIGGLPDKTVVITIKFNAETECAYSITFEFTWAKTFEDVQFDSSSF
TFSYIAQE.

1.8: Serotype 25 fiber protein (SEQ ID NO:21)
SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFQ
NFPPGVLSLKLADPITISNGDVSLKVGGGLTVEQDSGNLSVNPKAPLQVGTDKKL
ELALAPPFNVKDNKLDLLVGDGLKVIDKSISXLPGLLNYLVVLTGKGIGNEELKN
DDGSNKGVGLCVRIGEGGGLTFDDKGYLVAWNKKHDIRTLWTTLDPSPNCRID
VDKDSKLTLVLTKCGSQILANVSLLVVKGRFQNLNYKTNPNLPKTFTIKLLFDEN
GILKDSSNLDKNYWNYRNGNSILAEQYKNAVGFMPNLAAYPKSTTTQSKLYAR
NTIFGNIYLDSQAYNPVVIKITFNQEADSAYSITLNYSWGKDYENIPFDS

1.9: Serotype 27 fiber protein (SEQ ID NO:22)
IPFLTPPFVSSDGFKNFPPGVLSLKLADPITITNGDVSLKVGGGLVVEKESGKLSV
DPKTPLQVASDNKLELSYNAPFKVENDKLSLDVGHGLKVIGNEVSSLPGLINKLV
VLTGKGIGTEELKEQNSDKIIGVGINVRARGGLSFDNDGYLVAWNPKYDTRTLW
TTPDTSPNCKMLTKKDSKLTLTLTKCGSQILGNVSLLAVSGKYLNMTKDETGVKI
ILLFDRNGVLMQESSLDKEYWNYRNDNNVIGTPYENAVGFMPNLVAYPKPTSA
DAKNYSRSKIISNVYLKGLIYQPVIIIASFNQETTNGCVYSISFDFTCSKDYTGQQF
DVTSF

1.10: Serotype 28 fiber protein (SEQ ID NO:23)
SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFQ
NFPPGVLSLKLADPITIANGDVSLKLGGGLTVEKESGNLTVNPKAPLQVASGQLE
LAYYSPFDVKNNMLTLKAGHGLAVVTKDNTDLQPLMGTLVVLTGKGIGTGTSA
HGGTIDVRIGKNGSLAFDKNGDLVAWDKENDRRTLWTTPDTSPNCKMSEVKDS
KLTLILTKCGSQILGSVSLLAVKGEYQNMTASTNKNVKITLLFDANGVLLEGSSL
DKEYWNFRNNDSTVSGKYENAVPFMPNITAYKPVNSKSYARSHIFGNVYIDAKP
YNPVVIKISFNQETQNNCVYSISFDYTCSKEYTGMQFDVTSFTFSYIAQE.

1.11: Serotype 29 fiber protein (SEQ ID NO:24)
QNIPFLTPPFVSSDGFKNFPPGVLSLKLADPIAITNGDVSLKVGGGLTVEQDSGNL
SVNPKAPLQVGTDKKLELALAPPFDVRDNKLAILVGDGLKVIDRSISDLPGLLNY
LVVLTGKGIGNEELKNDDGSNKGVGLCVRIGEGGGLTFDDKGYLVAWNNKHDI
RTLWTTLDPSPNCKIDIEKDSKLTLVLTKCGSQILANVSLIIVNGKFKILNNKTDPS
LPKSFNIKLLFDQNGVLLENSNIEKQYLNFRSGDSILPEPYKNAIGFMPNLLAYAK
ATTDQSKIYARNTTYGNTYLDNQPYNPVVIKITFNNEADSAYSITFNYSWTKDYD
NIPFDSTSFTS

1.12: Serotype 30 fiber protein (SEQ ID NO:25)
SCSCPSAPTIFMLLQMKRARPSXDTFNPVYPYGYARNQNIPFXTPPFVXSDGFK
NFPPGVLSLKLADPIAITNGDVSLKVGGGLTVEQDSGNLSVNXKAPLQVGTDKK
LELALAPPFDVRDNKLAILVGDGLKVIDRSISDLPGLLNYLVVXTGKGIGNEELK
NDDGSNKGVGLCVRIGEGGGLTXDDKGYLVAWNNKHDIRTLWTTLDPSPNCKI
DIEKDSKLTLVLTKCGSQILANVSLIIVNGKFKILNNKTDPSLPKSFNIKLLFDQNG
VLLENSNIEKQYLNFRSGDSILPEPYKNAIGFMPNLLAYAKATTDQSKIYARNTIY
GNIYLDNQPYNPVVIKITFNNEADSAYSITFNYSWTKDYDNIPFDSTSFTFSYIAQE

1.13: Serotype 32 fiber protein (SEQ ID NO:26)

SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFQ
NFPPGVLSLKLADPITIANGNVSLKVGGGLTLEQDSGKLIVNPKAPLQVANDKLE
LSYADPFETSANKLSLKVGHGLKVLDEKNAGGLKDLIGTLVVLTGKGIGVEELK
NADNTNRGVGINVRLGKDGGLSFDKKGDLVAWNKHDDRRTLWTTPDPSPNCTI
DEERDSKLTLVLTKCGSQILANVSLLVVKGKFSNINNNTNPTDKKITVKLLFNEK
GVLMDSSSLKKEYWNYRNDNSTVSQAYDNAVPFMPNIKAYPKPTTDTSAKPED
KKSAAKRYIVSNVYIGGLPDKTVVITIKLNAETESAYSMTFEFTWAKTFENLQFD
SSSFTFSYIAQE.

1.14: Serotype 3 fiber protein (SEQ ID NO:27)

SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFK
NFPPGVLSLDLADPITITNGDVSLKVGGGLTLQEGSLTVNPKAPLQLANDKKLEL
VYDDPFEVSTNKLSLKVGHGLKVLDDKSAGGLQDLIGKLVVLTGKGIGIENLQN
DDGSSRGVGINVRLGTDGGLSFDRKGELVAWNRKDDRRTLWTTPDPSPNCKAE
TEKDSKLTLVLTKCGSQILATVSIIVLKGKYEFVKKETEPKSFDVKLLFDSKGVLL
PTSNLSKEYWNYRSYDNNIGTPYENAVPFMPNLKAYPKPTKTASDKAENKISSA
KNKIVSNFYFGGQAYQPGTIIIKFNEEIDETCAYSITFNFGWGKVYDNPFPFDTTSF
TFSYIAQE.

1.15: Serotype 34 fiber protein (SEQ ID NO:28)

SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYEDESTSQHPFINPGFISPNGFTQ
SPDGVLTLKCLTPLTTTGGSLQLKVGGGLTVDDTDGTLQKNIRATTPITKNNHSV
ELTIGNGLETQHNKLCAKLGNGLKFNNGDICIKDSINTLWTGINPPPNCQIVENTN
TNDGKLTLVLVKNGGLVNGYVSLVGVSDTVNQMFTQKTANIQLRLYFDSSGNL
LTDESDLKIPLKNKSSTATSETVASSKAFMPSTTAYPFNTTTRDSENYIHGICYYM
TSYDRSLFPLNISIMLNSRMISSNVAYAIQFEWNLNASESPEKQHMTLTTSPFFFSY
IIEDDN.

1.16: Serotype 35 fiber protein (SEQ ID NO:29)

SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYEDESTSQHPFINPGFISPNGFTQ
SPDGVLTLKCLTPLTTTGGSLQLKVGGGLTVDDTDGTLQENIRATAPITKNNHSV
ELSIGNGLETQNNKLCAKLGNGLKFNNGDICIKDSINTLWTGINPPPNCQIVENTN
TNDGKLTLVLVKNGGLVNGYVSLVGVSDTVNQMFTQKTANIQLRLYFDSSGNL
LTEESDLKIPLKNKSSTATSETVASSKAFMPSTTAYPFNTTTRDSENYIHGICYYM
TSYDRSLFPLNISIMLNSRMISSNVAYAIQFEWNLNASESPESNIMTLTTSPFFFSYI
TEDDN.

1.17: Serotype 36 fiber protein (SEQ ID NO:30)
SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFK
NFPPGVLSLKLADPIAIVNGDVSLKVGGGLTVEQDSGKLKVNPKIPLQVVNDQLE
LATDKPFKIENNKLALDVGHGLKVIDKTISDLQGLVGKLVVLTGVGIGTETLKDK
NDKVIGSAVNVRLGKDGGLDFNKKGDLVAWNRYDDRRTLWTTPDPSPNCKVS
EAKDSKLTLVLTKCGSQILASVALLIVKGKYQTISESTIPKDQRNFSVKLMFDEKG
KLLDKSSLDKEYWNFRSNDSVVGTAYDNAVPFMPNLKAYPKNTTTSSTNPDDKI
SAGKKNIVSNVYLEGRVYQPVALTVKFNSENDCAYSITFDFVWSKTYESPVAFD
SSSFTFSYIAQE.

1.18: Serotype 37 fiber protein (SEQ ID NO:31)
SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFK
NFPPGVLSLKLADPITITNGDVSLKVGGGLTLQDGSLTVNPKAPLQVNTDKKLEL
AYDNPFESSANKLSLKVGHGLKVLDEKSAAGLKDLIGKLVVLTGKGIGTENLEN
TDGSSRGIGINVRAREGLTFDNDGYLVAWNPKYDLRTLWTTPDTSPNCTIAQDK
DSKLTLVLTKCGSQILANVSLIVVAGKYHIINNKTNPKIKSFTIKLLFNKNGVLLD
NSNLGKAYWNFRSGNSNVSTAYEKAIGFMPNLVAVSKPSNSKKYARDIVYGNIY
LGGKPDQPGVIKTTFNQETGCEYSITFNFSWSKTYENVEFETTSFTFSYIAQE.

1.19: Serotype 38 fiber protein (SEQ ID NO:32)
SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFXTPPFVXSDGFQ
NFPPGVLSLKLADPITIANGNVSLKVGGGLTLEQDSGKLIVNXKAPLQVANDKLE
LSYADPFETSANKLSLKVGHGLKVLDEKNAGGLKDLIGTLVVLTGKGIGVEELK
NADNTNRGVGINVRLGKDGGLSFDKKGDXVAWNKHDDRRTLWTTPDPSPNCTI
DEERDSKLTLVLTKCGSQILANVSLLVVKGKFSNINNNTNPTDKKITVKLLFNEK
GVLMDSSSLKKEYWNYRNDNSTVSQAYDNAVPFMPNIKAYPKPTTDTSAKPED
KKSAAKRYIVSNVYIGGLPDKTVVITIKLNAETESAYSMTFEFTWAKTFENLQFD
SSSFTFSYIAQE.

1.20: Serotype 39 fiber protein (SEQ ID NO:33)
IRISPSSLPPLSQQMDSKTSPLGCYHSNWLTQSPSPMGMSHSRWEGGSPWQEGTG
DLKVNAKSPLQVATNKQLEIALAKPFEEKDGKLALKIGHGLAVVDENHTHLQSL
IGTLVILTGKGIGTGRAESGGTIDVRLGSGGGLSFDKDGNLVAWNKDDDRRTLW
TTPDPSPNCKIDQDKDSKLTFVLTKCGSQILANMSLLVVKGKFSMINNKVNGTD
DYKKFTIKLLFDEKGVLLKDSSLDKEYWNYRSNNNNVGSAYEEAVGFMPSTTA
YPKPPTPPTNPTTPLEKSQAKNKYVSNVYLGGQAGNPVATTVSFNKETGCTYSIT
FDFAWNKTYENVQC.

1.21: Serotype 42 fiber protein (SEQ ID NO:34)
SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFK
NFPPGVLSLKLANPIAITNGDVSLKVGGGLTLQDGTGKLTIDTKTPLQVANNKLE
LAFDAPLYEKNGKLALKTGHGLAVLTKDIGIPELIGSLVILTGKGIGTGTVAGGGT
IDVRLGDDGGLSFDKKGDLVAWNKKNDRRTLWTTPDPSPNCRVSEDKESKLTLI
LTKCGSQILASFSLLVVXGTYTTVDKNTTNKQFSIKLLFDANGKLKSESNLSGYW
NYRSDNSVVSTPYDNAVPFMPNTTAYPKIINSTTDPENKKSSAKKTIVGNVYLEG
NAGQPVAVAISFNKETTADYSITFDFAWSKAYETPVPFDTSSMTFSYIAQE.

1.22: Serotype 43 fiber protein (SEQ ID NO:35)
NIPXLTPPFVSSDGFKNFPPGVLSLKLADPITITNGDVSLKVGGGLTVEKESGNLT
VNPKAPLQVAKGQLELAYDSPFDVKNNMLTLKAGHGLAVVTKDNTDLQPLMG
TLVVLTGKGIGTGTSAHGGTIDVRIGKNGSLAFDKDGDLVAWDKENDRRTLWT
TPDTSPNCKMSEAKDSKLTLILTKCGSQILGSVSLLAVKGEYQNMTANTKKNVKI
TLLFDANGVLLAGSSXXKEYWNFRSNDSTVSGNYENAVQFMPNITAYKPTNSKS
YARSVIFGNVYIDAKPYNPVVIKISFNQETQNNCVYSISFDYTLSKDYPNMQFDV
TLS

1.23: Serotype 44 fiber protein (SEQ ID NO:36)
NIPFLTPPFVSSDGFQNFPPGVLSLKLADPITITNGNVSLKVGGGLTLQEGTGDLK
VNAKSPLQVATNKQLEIALAKPFEEKDGKLALKIGHGLAVVDENHTHLQSLIGTL
VILTGKGIGTGSAESGGTIDVRLGSGGGLSFDKDGNLVAWNKDDDRRTLWTTPD
PSPNCKIDQDKDSKLTFVLTKCGSQILANMSLLVVKGKFSMINNKVNGTDDYKK
FTIKLLFDEKGVLLKDSSLDKEYWNYRSNNNNVGSAYEEAVGFMPSTTAYPKPP
TPPTNPTTPLEKSQAKNKYVSNVYLGGQAGNPVATTVSFNKETGCTYSITFDFA
WNKTYENVQFDSSF

1.24: Serotype 45 fiber protein (SEQ ID NO:37)
NIPFLTPPFVSSDGFQNFPPGVLSLKLADPIAITNGDVSLKVGGGLTVEKDSGNLK
VNPKAPLQVTTDKQLEIALAYPFEVSNGKLGIKAGHGLKVIDKIAGLEGLAGTLV
VLTGKGIGTENLENSDGSSRGVGINVRLAKDGVLAFDKKGDLVAWNKHDDRRT
LWTTPDPSPNCTIDQERDSKLTLVLTKCGSQILANVSLLVVKGKFSNINNNANPT
DKKITVKLLFNEKGVLMDSSTLKKEYWNYRNDNSTVSQAYDNAVPFMPNIKAY
PKPSTDTSAKPEDKKSAAKRYIVSNVYIGGLPDKTVVITIKFNAETECAYSITFEFT
WAKTFEDVQCDSSSFT

1.25: Serotype 46 fiber protein (SEQ ID NO:38)
NIPFLTPPFVSSDGFKNFPPGVLSLKLADPIAIVNGDVSLKVGGGLTLQEGNLTVD
AKAPLQVANDNKLELSYADPFEVKDTKLQLKVGHGLKVIDEKTSSGLQSLIGNL
VVLTGKGIGTQELKDKDDETKNIGVGINVRIGKNESLAFDKDGNLVAWDNENDR
RTLWTTPDTSSKFVKISTEKDSKLTLVLTKCGSQILASVSLLAVAGSYLNMTAST
QKSIKVSLMFDSKGLLMTTSSIDKGYWNYRNKNSVVGTAYENAIPFMPNLVAYP
RPNTPDSKIYARSKIVGNVYLAGLAYQPIVITVSFNQEKDASCAYSITFEFAWNKD
YVGQFDTTSFT

1.26: Serotype 47 fiber protein (SEQ ID NO:39)
SCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFKNF
PPGVLSLKLADPITITNGDVSLKVGGGLTLQEGTGNLTVNAKAPLQVADDKKLE
LSYDNPFEVSANKLSLKVGHGLKVLDEKNSGGLQELIGKLVILTGKGIGVEELKN
ADNTNRGVGINVRLGKDGGLSFDKKGELVAWNKHNDTRTLWTTPDPSPNCKIE
QDKDSKLTLVLTKCGSQILATMAFQVVKGTYENISKNTAKKSFSIKLLFDDNGKL
LEGSSLDKDYWNFRNDDSIMPNQYDNAVPFMPNLKAYPNPKTSTVLPSTDKKSN
GKNTIVSNLYLEGKAYQPVAVTITFNKETGCTYSITFEFGWAKTYDVPIPFDSSSF
TFSYIAQE.

1.27: Serotype 48 fiber protein (SEQ ID NO:40)
SDIPFLTPPFVSSDGFQNFPPGVLSLKLADPITITNGNVSLKVGGGLTLQEGTGDLK
VNAKSPLQVATNKQLEIALAKPFEEKDGKLAIKIGHELAVVDENLTHLQSLIGTL
VILTGKGIGTGRAESGGTIDVRLGSGGGLSFDKDGNLVAWNKDDDRRTLWTTPD
PSPNCKIDQDKDSKLTFVLTKCGSQILANMSLLVVKGKFSMINNKVNGTDDYKK
FTIKLLFDEKGVLLKDSSLDKEYWNYRSNNNNVGSAYEEAVGFMPSTTAYPKPP
TPPTNPTTPLEKSQAKNKYVSNVYLGGQAGNPVATTVSFNKETGCTYSITFDFA
WNKTYKMAFIPRFNF

1.28: Serotype 49 fiber protein (SEQ ID NO:41)

SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYGYARNQNIPFLTPPFVSSDGFQ
NFPPGVLSLKLADPIAITNGNVSLKVGGGLTVEQDSGNLKVNPKAPLQVATDNQ
LEISLADPFEVKNKKLSLKVGHGLKVIDENISTLQGLLGNLVVLTGMGIGTEELK
KDDKIVGSAVNVRLGQDGGLTFDKKGDLVAWNKENDRRTLWTTPDPSPNCKVS
EEKDSKLTLVLTKCGSQILASVSLLVVKGKFANINNKTNPGEDYKXFSVKLLFDA
NGKLLTGSSLDGNYWNYKNKDSVIGSPYENAVPFMPNSTAYPKIINNGTANPED
KKSAAKKTIVTNVYLGGDAAKPVATTISFNKETESNCVYSITFDFAWNKTYKNV
PFDSSSLTFSYIAQE.

1.29: Serotype 52 fiber protein (SEQ ID NO:42)

SCSCPSAPTIFMLLQMKRARPSEDTFNPVYPYEDESTSQHPFINPGFISPNGFTQ
SPDGVLTLNCNTPLTTTGGPLQLKVGGGLIVDDTDGTLQENIRVTAPITKNNHSV
ELSIGNGLETQNNKLCAKLGNGLKFNNGDICIKDSINTLWTGIKPPPNCQIVENTD
TNDGKLTLVLVKNGGLVNGYVSLVGVSDTVNQMFTQKSATIQLRLYFDSSGNLL
TDESNLKIPLKNKSSTATSEAATSSKAFMPSTTAYPFNTTTRDSENYIHGICYYMT
SYDRSLVPLNISIMLNSRTISSNVAYAIQFEWNLNAKESPESNIATLTTSPFFFSYIIE
DTTKCISLCYVSTCLFF

APPENDIX B

(REPLACEMENT FIGURE 10)

(Attorney Docket No.: 2578-4123.2US)
(Serial No. 09/348,354)

Figure 10:

1.1: Serotype 34 hexon protein (SEQ ID NO:43)
LSRRAPGFPLVKMATPSMLPQWAYMHIAGQDASEYLSPGLVQFARATDTYFNL
GNKFRNPTVAPTHDVTTDRSQRLMLRFVPVDREDNTYSYKVRYTLAVGDNRVL
DMASTFFDIRGVLDRGPSFKPYSGTAYNSLAPKGAPNASQWLDKGVTSTGLVDD
GNTDDGEEAKKATYTFGNAPVKAEAEITKDGLPVGLEVSTEGPKPIYADKLYQP
EPQVGDETWTDLDGKTEEYGGRVLKPETKMKPCYGSFAKPTNIKGGQAKVKPK
EDDGTNNIEYDIDMNFFDLRSQRSELKPKIVMYAENVDLECPDTHVVYKPGVSD
ASSETNLGQQSMPNRPNYIGFRDNFIGLMYYNSTGNMGVLAGQASQLNAVVDL
QDRNTELSYQLLDSLGDRTRYVSMWNQAVDSYDPDVRVIENHGVEDELPNYCF
PLDGVGPRTDSYKEIKPNGDQSTWTNVDPTGSSELAKGNPFAMEINLQANLWRS
FLYSNVALYLPDSYKYTPSNVTLPENKNTYDYMNGRVVPPSLVDTYVNIGARWS
LDAMDNVNPFNHHRNAGLRYRSMLLGNGRYVPFHIQVPQKFFAVKNLLLLPGS
YTYEWNFRKDVNMVLQSSLGNDLRVDGASISFTSINLYATFFPMAHNTASTLEA
MLRNDTNDQSFNDYLSAANMLYPIPANATNIPISIPSRNWAAFRGWSFTRLKTKE
TPSLGSGFDPYFVYSGSIPLDGTFYLNHTFKKVSIMFDSSVSWPGNDRLLSPNEFEI
KRTVDGEGYNVAQCNMTDWFLVQMLANYNIGYQGFYIPEGYKDRMYSFFRNF
QPMSRQVVDEVNYKDFKAVIPYQHNNSGFVGYMAPTMRQGQPYPANYPYPLIG
TTAVNSVTQKKFLCDRTMWRIPFSSNFMSMGALTDLGQNMLYANSAHALDMTF
EVDPMDEPTLLYLLFEVFDVVRVQPHRGIIEAVYLRTPFSAGNATT.

1.2: Serotype 35 hexon protein (SEQ ID NO:44)
LSRRAPGFPLVKMATPSMLPQWAYMHIAGQDASEYLSPGLVQFARATDTYFNL
GNKFRNPTVAPTHDVTTDRSQRLMLRFVPVDREDNTYSYKVRYTLAVGDNRVL
DMASTFFDIRGVLDRGPSFKPYSGTAYNSLAPKGAPNASQWLDKGVTSTGLVDD
GNTDDGEEAKKATYTFGNAPVKAEAEITKDGLPVGLEVSTEGPKPIYADKLYQP
EPQVGDTWTDLDGKTEEYGGRVLKPETKMKPCYGSFAKPTNIKGGQAKVKPKE
DDGTNNIYDIDMNFFDLRSQRSELKPKIVMYAENVDLECPDTHVVYKPGVSDAS
SETNLGQQMPNRPNYIGFRDNFIGLMYYNSTGNMGVLAGQASQLNAVVDLQDR
NTELSYQLLLSLGDRTRYFSMWNQAVDSYDPDVRVIENHGVEDELPNYCFPLDG
VGPRTDSYKEIPNGDQSTWTNVDPTGSSELAKGNPFAMEINLQANLWRSFLYSN
VALYLPDSYKYTSNVTLPENKNTYDYMNGRVVPPSLVDTYVNIGARWSLDAMD
NVNPFNHHRNAGRYRSMLLGNGRYVPFHIQVPQKFFAVKNLLLLPGSYTYEWN
FRKDVNMVLQSSLDLRVDGASISFTSINLYATFFPMAHNTASTLEAMLRNDTND
QSFNDYLSAANMLYPIANATNIPISIPSRNWAAFRGWSFTRLKTKETPSLGSGFDP
YFVYSGSIPYLDGTFYLHTFKKVSIMFDSSVSWPGNDRLLSPNEFEIKRTVDGEGY
NVAQCNMTKDWFLVQLANYNIGYQGFYIPEGYKDRMYSFFRNFQPMSRQVVDE
VNYKDFKAVAIPYQHNNGFVGYMAPTMRQGQPYPANYPYPLIGTTAVNSVTQK
KFLCDRTMWRIPFSSNFMSALTDLGQNMLYANSAHALDMTFEVDPMDEPTLLY
LLFEVFDVVRVHQPHRGIIEAVLRTPFSAGNATT.

1.3: Serotype 36 hexon protein (SEQ ID NO:45)

LSRRAPGFPLVKMATPSMLPQWAYMHIAGQDASEYLSPGLVQFARATDTYFNL
GNKFRNPTVAPTHDVTTDRSQRLMLRFVPVDREDNTYSYKVRYTLAVGDNRVL
DMASTFFDIRGVLDRGPSFKPYSGTAYNSLAPKGAPNASQWLDKGVTSTGLVDD
GNTDDGEEAKKATYTFGNAPVKAEAEITKDGLPVGLEVSTEGPKPIYADKLYQP
EPQVGDTWTDLDGKTEEYGGRVLKPETKMKPCYGSFAKPTNIKGGQAKVKPKE
DDGTNNIYDIDMNFFDLRSQRSELKPKIVMYAENVDLECPDTHVVYKPGVSDAS
SETNLGQQSMPNRPNYIGFRDNFIGLMYYNSTGNMGVLAGQASQLNAVVDLQD
RNTELSYQLLDSLGDRTRYFSMWNQAVDSYDPDVRVIENHGVEDELPNYCFPLD
GVGPRTDSYKIKPNGDQSTWTNVDPTGSSELAKGNPFAMEINLQANLWRSFLYS
NVALYLPDSYKYTPSNVTLPENKNTYDYMNGRVVPPSLVDTYVNIGARWSLDA
MDNVNPFNHHRAGLRYRSMLLGNGRYVPFHIQVPQKFFAVKNLLLLPGSYTYE
WNFRKDVNMVLQSLGNDLRVDGASISFTSINLYATFFPMAHNTASTLEAMLRND
TNDQSFNDYLSAANMLYPIPANATNIPISIPSRNWAAFRGWSFTRLKTKETPSLGS
GFDPYFVYSGSIPYDGTFYLNHTFKKVSIMFDSSVSWPGNDRLLSPNEFEIKRTVD
GEGYNVAQCNMTKWFLVQMLANYNIGYQGFYIPEGYKDRMYSFFRNFQPMSR
QVVDEVNYKDFKAVIYQHNNSGFVGYMAPTMRQGQPYPANYPYPLIGTTAVNS
VTQKKFLCDRTMWRIPFSSNFMSMGALTDLGQNMLYANSAHALDMTFEVDPM
DEPTLLYLLFEVFDVVRVQPHRGIIEAVYLRTPFSAGNATT.

1.4: Serotype 41 hexon protein (SEQ ID NO:46)

VCVHVAARGAAEPPRARFPLVKMATPSMMPQWAYMHIAGQDASEYLSPGLVQ
FARATDTYFSLGNKFRNPTVAPTHDVTTDRSQRLTLRFVPVDREDTTYSYKARFT
LAGDNRVLDMASTYFDIRGVLDRGPSFKPYSGTAYNSLAPKGAPNSSQWADKE
RVNGGGNTKDVTKTFGVAAMGGEDITEKGLKIGTDTTANEPIFADKNFQPEPQV
GEENQETFVFYGGRALKKETKMKPCYGSFARPTNEKGGQAKFIIGDNGQPTENH
DITMAFDTPGGTITGGTGGPQDELKADIVMYTENINLETPDTHVVYKPGKEDDSS
EINLVQSMPNRPNYIGFRDNFVGLMYYNSTGNMGVLAGQASQLNAVVDLQDRN
TELSYQLLDSLGDRTRYFSMWNSAVDSYDPDVRIIENHGVEDELPNYCFPLDGSG
TNSAFQGKIKQNQDGDVNDDWEKDDKVSTQNQICKGNIYAMEINLQANLWKSF
LYSNVALYLDSYKYTPANVTLPTNTNTYEYMNGRVVAPSLVDAYINIGARWSLD
PMDNVNPFNHRNAGLRYRSNASGQRPLRALPHPSAPKVLCHQEPAPAPGLLHLR
VELPQGRQHDAEFPRKRPARRRRLRALRQRQPLCHILPHGAQHRLHPGSHAAQR
HQRPVLQRLPLRQHALPHPGQGHQRAHLHPLAQLGRLSRLEFHPAQDQGNSFPR
LGFRPLLCLLGLHPLPRRDLLPQPHLQEGLHHVRLLGQLARQRPAVTPNEFEIKRS
VDGEGYNVAQCMTKDWFLVQMLSHYNIGYQGFHVPEGYKDRMYSFFRNFQPM
SRQVVDEINYKDYAVTLPFQHNNSGFTGYLAPTMRQGQPYPANFPYPLIGSTAVP
SVTQKKFLCDRVMWRIPFSSNFMSMGALTDLGQNMLYANSAHALDITFEVDPM
DEPTLLYLLFEVFDVVVHQPHRGVIEAVYLRTPFSAGNATT.